

Spring 2016

MTH 144-2

Syllabus and Daily Schedule

**Point Loma Nazarene University**

**MTH 144-2** Calculus with Applications

**4.0 Units**

**Class Time** MWF 10:55- 12:05 a.m.

**Location** RS 108

**Instructor** Dr. Catherine Crockett

**Office** RS 226

**Phone** 619-849-2723

**Email** catherinecrockett@pointloma.edu

**Office Hours** MW 1-3 and T&TH 9-11 or by appointment.

**Textbook:** Calculus & Its Applications by Goldstein, Lay, Schneider, and Asmar, Pearson, 13<sup>th</sup> ed.

**Prerequisite:** MTH 123 or 133 (or equivalent).

**Important Dates**

**Exam 1** **February 8**

**Exam 2** **March 2**

**Exam 3** **April 18**

**Final exam** **May 2**

**Course Description/ objectives:**

This course is designed to help you:

- understand the techniques of differential and integral calculus of the elementary functions of one variable
- and will cover topics such as limits, continuity, derivatives, integrals and various applications

**General Education:**

This course is one of the components of the General Education Program at Point Loma Nazarene University, under the category of *Developing Cognitive Abilities*. By including this course in a common educational experience for undergraduates, the faculty supports the pursuit of personal awareness and skill development, focusing on the analytical, communicative, and quantitative skills necessary for successful living in society.

**Learning Outcomes for this Course:**

Students will be able to formulate a mathematical model from a verbal description of a problem.

Students will be able to solve non-routine problems using logic and quantitative techniques.

Students will be able to construct solutions to problems using computational techniques.

**General Education learning outcome:** Students will be able to solve problems that are quantitative in nature:

**Note: Financial Literacy**

A portion of PLNU's mathematics general education is focused on financial literacy. Part of this class will examine issues related to borrowing and saving money, budgeting and the use of credit cards using some of the concepts introduced in calculus.

**Grading:** Grades for the course will be based on homework (25%), three exams (15% each; total of 45%), and a final exam (30%).

**Homework (25%):** Homework will be assigned every class meeting. A homework assignment is late if it is not received at the start of class on the due date. No late homework will be accepted; however the two lowest homework scores will be dropped. Please be sure that your homework is stapled together and the problems are in order. Homework will be scored on a combination of completeness and correctness. A random selection (the same for all people) of the problems will be graded on any homework assignment.

**Tests and Final Exam (15% each and 30%):** Tests and the Final Exam will include problems and questions over material assigned in the text, readings and handouts, as well as material presented in class.

No examination shall be missed without prior consent by me or a well-documented emergency beyond your control. A score of zero will be assigned for an examination that is missed without prior consent or a well-documented emergency beyond your control. The examination schedule is included in the daily schedule. I do not intend to accept excuses such as poor communication with parents, benefactors, sport team sponsors and/or travel agents.

**Please note:                      The Final Exam is COMPREHENSIVE.**  
**May 2, (Monday) at 10:30 a.m. to 1:00 p.m.**

**Grading Scale:** Course grades will be assigned according to the following scale:

Grading Scale in percentages				
	A	B	C	D
+		(87.5, 90)	(77.5, 80)	(67.5, 70)
	[92.5, 100]	[82.5, 87.5]	[72.5, 77.5]	[62.5, 67.5]
-	[90, 92.5)	[80, 82.5)	[70, 72.5)	[60, 62.5)

### University Mission:

Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service becomes an expression of faith. Being of Wesleyan heritage, we aspire to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

### Department Mission:

The Mathematical, Information, and Computer Sciences department at Point Loma Nazarene University is committed to maintaining a curriculum that provides its students with the tools to be productive, the passion to continue learning, and Christian perspectives to provide a basis for making sound value judgments.

### Attendance:

Attendance is expected at each class session. In the event of an absence you are responsible for the material covered in class and the assignments given that day.

Regular and punctual attendance at all classes in which a student is registered is considered essential to optimum academic achievement. Therefore, regular attendance and participation in each course are minimal requirements to be met. There are no allowed or excused absences except as approved in writing by the Provost for specific students participating in certain university-sanctioned activities. Excused absences still count toward the 10%-20% limits, but allow students to make up work, quizzes, or tests missed as a result of a university-sanctioned activity. Activities of a unique nature, such as labs or other activities identified clearly on the syllabus, cannot be made up except in rare instances when instructors have given advanced, written approval for doing so. Whenever the number of accumulated absences in a class, for any cause, exceeds ten (10) percent of the total number of class meetings, the faculty member should send an e-mail to the student and the Vice Provost for Academic Administration (VPAA) warning of attendance jeopardy. If more than twenty (20) percent of the total number of class meetings is reported as missed, the faculty member or VPAA may initiate the student's de-enrollment from the course without further advanced notice to the student. If the date of de-enrollment is past the last date to withdraw from a class, the student will be assigned a grade of W or WF consistent with university policy in the Grading section of the catalog. There are no refunds for courses where a de-enrollment was processed. For more details see the PLNU catalog:

[http://catalog.pointloma.edu/content.php?catoid=18&navoid=1278#Class\\_Attendance](http://catalog.pointloma.edu/content.php?catoid=18&navoid=1278#Class_Attendance)

**Class Enrollment:**

It is the student's responsibility to maintain his/her class schedule. Should the need arise to drop this course (personal emergencies, poor performance, etc.), the student has the responsibility to follow through (provided the drop date meets the stated calendar deadline established by the university), not the instructor. Simply ceasing to attend this course or failing to follow through to arrange for a change of registration (drop/add) may easily result in a grade of F on the official transcript.

**Academic Accommodations:**

While all students are expected to meet the minimum academic standards for completion of their courses as established by the instructors, students with special needs may require academic accommodations. At Point Loma Nazarene University, students requesting academic accommodations must file documentation with the Disability Resource Center (DRC), located in the Bond Academic Center. Students can also reach the Disability Resource Center by phone at 619-849-2486 or by e-mail at [DRC@pointloma.edu](mailto:DRC@pointloma.edu). Once the student files documentation, the Disability Resource Center contacts the student's instructors and provides written recommendations for reasonable and appropriate accommodations to meet the individual needs of the student. This policy assists the university in its commitment to full compliance with Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities (ADA) Act of 1990, and ADA Amendments Act of 2008, all of which prohibit discrimination against students with special needs and guarantees all qualified students equal access to the benefits of PLNU programs and activities. For more details see the PLNU catalog:

[http://catalog.pointloma.edu/content.php?catoid=18&navoid=1278#Academic Accommodations](http://catalog.pointloma.edu/content.php?catoid=18&navoid=1278#Academic_Accommodations)

Students with learning disabilities who may need accommodations should discuss options with the instructor during the first two weeks of class.

**Academic Honesty:**

The Point Loma Nazarene University community holds the highest standards of honesty and integrity in all aspects of university life. Any violation of the university's commitment is a serious affront to the very nature of Point Loma's mission and purpose. Violations of academic honesty include cheating, plagiarism, falsification, aiding academic dishonesty, and malicious interference. The details of PLNU's meaning of each of these words can be found in the PLNU catalog at:

[http://catalog.pointloma.edu/content.php?catoid=18&navoid=1278#Academic Honesty](http://catalog.pointloma.edu/content.php?catoid=18&navoid=1278#Academic_Honesty)

A student remains responsible for the academic honesty of work submitted in PLNU courses and the consequences of academic dishonesty beyond receipt of the final grade in the class and beyond the awarding of the diploma. Ignorance of these catalog policies will not be considered a valid excuse or defense. Students may not withdraw from a course as a response to a consequence.

A student who is caught cheating on any item of work will receive a zero on that item and may receive an "F" for the semester. See the PLNU Catalog for a further explanation of the PLNU procedures for academic dishonesty ([http://catalog.pointloma.edu/content.php?catoid=18&navoid=1278#Academic Honesty](http://catalog.pointloma.edu/content.php?catoid=18&navoid=1278#Academic_Honesty)).

**Final Exam: Date and Time:**

The final exam date and time is set by the university at the beginning of the semester and may not be changed by the instructor. Only in the case that a student is required to take three exams during the same day of finals week is an instructor authorized to change the exam date and time for that particular student.

**Copyright Protected Materials:**

Point Loma Nazarene University, as a non-profit educational institution, is entitled by law to use materials protected by the US Copyright Act for classroom education. Any use of those materials outside the class may violate the law.

**Credit Hour:**

In the interest of providing sufficient time to accomplish the stated course learning outcomes, this class meets the PLNU credit hour policy for a 4.0 unit class delivered over 15 weeks. Specific details about how the class meets the credit hour requirements can be provided upon request.

**Cell Phones: Cell Phones:** Turn off any cell phone, pager or things that make noise while you are in class. Also, do not text or work on other classes while in class -to do so is disrespectful to me and your classmates. This is a learning community - by texting in class you are removing yourself from this community.

**General Advice:** The key to success in this class is to attend lectures regularly and do your homework. You learn mathematics by doing it yourself. You should expect to spend approximately two hours outside of class for every one hour in class working on homework and going over concepts. When doing homework, please note it is normal to not be able to do every problem correct on the first attempt. Do not be discouraged, instead ask questions- that is your job as a learner of mathematics.

**Sources of Help:**

1. Me. If you have questions, ask me. See office hours.
2. FREE TUTORING- Math Learning Center, RS-230. Hours are posted on the door.
3. Other classmates. Form study groups! Work together!

**Tentative Schedule:** While topic order may change- the test dates will not.

Week	M	W	F
1	1/12 (Tuesday) Review Chapter 0 <b>Financial math</b>	1/13 1.1: Slope of a line 1.2: Slope of a curve at a point	1/15 1.3: The derivative
2	1/18 MLK Day no class	1/20 1.4: Limits & Derivatives 1.3: The derivative	1/22 1.5: Differentiability & continuity 1.6: Some rules for differentiation
3	1/25 1.7: More about derivatives 1.8: Derivatives as a rate of change	1/27 2.1: Describing Graphs of functions 2.2: First & Second Derivative Rules	1/29 2.3: First & second derivative tests 2.5: Optimization Problems
4	2/1 2.6: Further Optimization <b>Financial Math</b>	2/3 2.6: Further Optimization 2.7: <b>Financial Math</b>	2/5 <b>Review</b>
5	2/8 <b>Exam #1 ( Chapter 0-2)</b>	2/10 3.1: The Product & Quotient Rules	2/12 3.2: The Chain Rule
6	2/15 3.3: Implicit differentiation & related rates	2/17 4.1: Exponential functions 4.2: $e^x$	2/19 4.3: Differentiation of $e^x$ 4.4: $\ln x$
7	2/22 4.4: $\ln x$ 4.5: The derivative of $\ln x$	2/24 5.1: exponential growth/ decay 5.2: <b>Compound Interest</b>	2/26 5.2: <b>Compound Interest</b> 5.3 : <b>Applications of <math>\ln x</math> to Economics</b>
8	2/29 <b>Review</b>	3/2 <b>Exam #2 (Chapter 3-5.3)</b>	3/4 5.4: Further exponential models
Spring Break 3-7 to 3-11			
9	3/14 6.1: Antidifferentiation	3/16 6.2: Area and Riemann Sums	3/18 6.3: Definite Integrals and FTC
10	3/21 6.3: Definite Integrals and FTC	3/23 6.4: Area in xy- plane	3/25 Easter Break
11	3/28 Easter Break	3/30 8.1 & 8.2: Review of trig. functions	4/1 8.3: Differentiation & integration of sine & cosine
12	4/4 8.4: The Tangent & other Trig functions	4/6 9.1: Integration by Substitution	4/8 9.1: Integration by Substitution
13	4/11 9.2: Integration by Parts	4/13 9.2: Integration by Parts	4/15 <b>Review</b>
14	4/18 <b>Exam #3 (Chapter 5.4-9.2)</b>	4/20 9.3: Evaluation of Definite Integrals	4/22 9.4: Approximation of Definite Integrals
15	4/25 11.1: Taylor Polynomials	4/27 11.2: The Newton- Raphson Algorithm	4/29 <b>Review</b>
16 Final Exam	5/2 <b>Final Exam 10:30- 1:00</b>	5/4	5/6